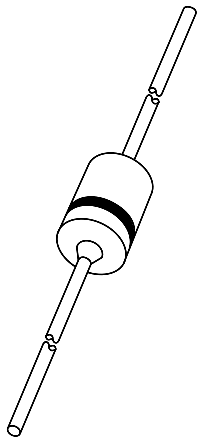
DATA SHEET



BZX79 series
Voltage regulator diodes

Product data sheet
Supersedes data of 1999 May 25

2002 Feb 27

founded by Philips

FEATURES

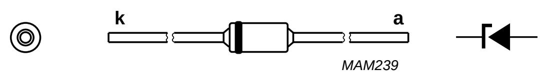
- Total power dissipation: max. 500 mW
- Two tolerance series: ±2%, and approx. ±5%
- Working voltage range: nom. 2.4 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

- Low voltage stabilizers or voltage references.

DESCRIPTION

Low-power voltage regulator diodes in hermetically sealed leaded glass SOD27 (DO-35) packages. The diodes are available in the normalized E24 ±2% (BZX79-B) and approx. ±5% (BZX79-C) tolerance range. The series consists of 37 types with nominal working voltages from 2.4 to 75 V.



The diodes are type branded.

Fig.1 Simplified outline (SOD27; DO-35) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	250	mA
I_{ZSM}	non-repetitive peak reverse current	t_p = 100 µs; square wave; T_j = 25 °C prior to surge	see Tables 1 and 2		A
P_{tot}	total power dissipation	T_{amb} = 50 °C; note 1	–	400	mW
		T_{amb} = 50 °C; note 2	–	500	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	t_p = 100 µs; square wave; T_j = 25 °C prior to surge; see Fig.3	–	40	W
T_{stg}	storage temperature		–65	+200	°C
T_j	junction temperature		–65	+200	°C

Notes

1. Device mounted on a printed circuit-board without metallization pad; lead length max.
2. Tie-point temperature ≤ 50 °C; max. lead length 8 mm.

ELECTRICAL CHARACTERISTICS

Total BZX79-B and BZX79-C series

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	I_F = 10 mA; see Fig.4	0.9	V

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
I_R	reverse current			
	BZX79-B/C2V4	V_R = 1 V	50	μA
	BZX79-B/C2V7	V_R = 1 V	20	μA
	BZX79-B/C3V0	V_R = 1 V	10	μA
	BZX79-B/C3V3	V_R = 1 V	5	μA
	BZX79-B/C3V6	V_R = 1 V	5	μA
	BZX79-B/C3V9	V_R = 1 V	3	μA
	BZX79-B/C4V3	V_R = 1 V	3	μA
	BZX79-B/C4V7	V_R = 2 V	3	μA
	BZX79-B/C5V1	V_R = 2 V	2	μA
	BZX79-B/C5V6	V_R = 2 V	1	μA
	BZX79-B/C6V2	V_R = 4 V	3	μA
	BZX79-B/C6V8	V_R = 4 V	2	μA
	BZX79-B/C7V5	V_R = 5 V	1	μA
	BZX79-B/C8V2	V_R = 5 V	700	nA
	BZX79-B/C9V1	V_R = 6 V	500	nA
	BZX79-B/C10	V_R = 7 V	200	nA
	BZX79-B/C11	V_R = 8 V	100	nA
	BZX79-B/C12	V_R = 8 V	100	nA
	BZX79-B/C13	V_R = 8 V	100	nA
	BZX79-B/C15 to BZX79-B/C75	$V_R = 0.7V_{Znom}$	50	nA

Table 1 Per type, BZX79-**B/C2V4** to BZX79-**B/C24**
T_j = 25 °C unless otherwise specified.

BZX79-Bxxx Cxxx	WORKING VOLTAGE V_Z (V) at I_{Ztest} = 5 mA				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_{Ztest} = 5 mA (see Figs 5 and 6)			DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 µs; T_{amb} = 25 °C
	Tol. ±2% (B)		Tol. approx. ±5% (C)		at I_{Ztest} = 1 mA		at I_{Ztest} = 5 mA						
	MIN.	MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.	MAX.	MAX.
2V4	2.35	2.45	2.2	2.6	275	600	70	100	–3.5	–1.6	0	450	6.0
2V7	2.65	2.75	2.5	2.9	300	600	75	100	–3.5	–2.0	0	450	6.0
3V0	2.94	3.06	2.8	3.2	325	600	80	95	–3.5	–2.1	0	450	6.0
3V3	3.23	3.37	3.1	3.5	350	600	85	95	–3.5	–2.4	0	450	6.0
3V6	3.53	3.67	3.4	3.8	375	600	85	90	–3.5	–2.4	0	450	6.0
3V9	3.82	3.98	3.7	4.1	400	600	85	90	–3.5	–2.5	0	450	6.0
4V3	4.21	4.39	4.0	4.6	410	600	80	90	–3.5	–2.5	0	450	6.0
4V7	4.61	4.79	4.4	5.0	425	500	50	80	–3.5	–1.4	0.2	300	6.0
5V1	5.00	5.20	4.8	5.4	400	480	40	60	–2.7	–0.8	1.2	300	6.0
5V6	5.49	5.71	5.2	6.0	80	400	15	40	–2.0	1.2	2.5	300	6.0
6V2	6.08	6.32	5.8	6.6	40	150	6	10	0.4	2.3	3.7	200	6.0
6V8	6.66	6.94	6.4	7.2	30	80	6	15	1.2	3.0	4.5	200	6.0
7V5	7.35	7.65	7.0	7.9	30	80	6	15	2.5	4.0	5.3	150	4.0
8V2	8.04	8.36	7.7	8.7	40	80	6	15	3.2	4.6	6.2	150	4.0
9V1	8.92	9.28	8.5	9.6	40	100	6	15	3.8	5.5	7.0	150	3.0
10	9.80	10.20	9.4	10.6	50	150	8	20	4.5	6.4	8.0	90	3.0
11	10.80	11.20	10.4	11.6	50	150	10	20	5.4	7.4	9.0	85	2.5
12	11.80	12.20	11.4	12.7	50	150	10	25	6.0	8.4	10.0	85	2.5
13	12.70	13.30	12.4	14.1	50	170	10	30	7.0	9.4	11.0	80	2.5
15	14.70	15.30	13.8	15.6	50	200	10	30	9.2	11.4	13.0	75	2.0
16	15.70	16.30	15.3	17.1	50	200	10	40	10.4	12.4	14.0	75	1.5
18	17.60	18.40	16.8	19.1	50	225	10	45	12.4	14.4	16.0	70	1.5
20	19.60	20.40	18.8	21.2	60	225	15	55	12.3	15.6	18.0	60	1.5
22	21.60	22.40	20.8	23.3	60	250	20	55	14.1	17.6	20.0	60	1.25
24	23.50	24.50	22.8	25.6	60	250	25	70	15.9	19.6	22.0	55	1.25

Table 2 Per type, BZX79-**B/C27** to BZX79-**B/C75**

T_j = 25 °C unless otherwise specified.

BZX79-Bxxx Cxxx	WORKING VOLTAGE V_Z (V) at I_{Ztest} = 2 mA				DIFFERENTIAL RESISTANCE r_{dif} (Ω)				TEMP. COEFF. S_Z (mV/K) at I_{Ztest} = 2 mA (see Figs 5 and 6)			DIODE CAP. C_d (pF) at f = 1 MHz; V_R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I_{ZSM} (A) at t_p = 100 µs; T_{amb} = 25 °C
	Tol. ±2% (B)		Tol. approx. ±5% (C)		at I_{Ztest} = 0.5 mA		at I_{Ztest} = 2 mA						
	MIN.	MAX.	MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.	MAX.	MAX.
27	26.50	27.50	25.1	28.9	65	300	25	80	18.0	22.7	25.3	50	1.0
30	29.40	30.60	28.0	32.0	70	300	30	80	20.6	25.7	29.4	50	1.0
33	32.30	33.70	31.0	35.0	75	325	35	80	23.3	28.7	33.4	45	0.9
36	35.30	36.70	34.0	38.0	80	350	35	90	26.0	31.8	37.4	45	0.8
39	38.20	39.80	37.0	41.0	80	350	40	130	28.7	34.8	41.2	45	0.7
43	42.10	43.90	40.0	46.0	85	375	45	150	31.4	38.8	46.6	40	0.6
47	46.10	47.90	44.0	50.0	85	375	50	170	35.0	42.9	51.8	40	0.5
51	50.00	52.00	48.0	54.0	90	400	60	180	38.6	46.9	57.2	40	0.4
56	54.90	57.10	52.0	60.0	100	425	70	200	42.2	52.0	63.8	40	0.3
62	60.80	63.20	58.0	66.0	120	450	80	215	58.8	64.4	71.6	35	0.3
68	66.60	69.40	64.0	72.0	150	475	90	240	65.6	71.7	79.8	35	0.25
75	73.50	76.50	70.0	79.0	170	500	95	255	73.4	80.2	88.6	35	0.2

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point	lead length 8 mm.	300	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	lead length max.; see Fig.2 and note 1	380	K/W

Note

1. Device mounted on a printed circuit-board without metallization pad.

GRAPHICAL DATA

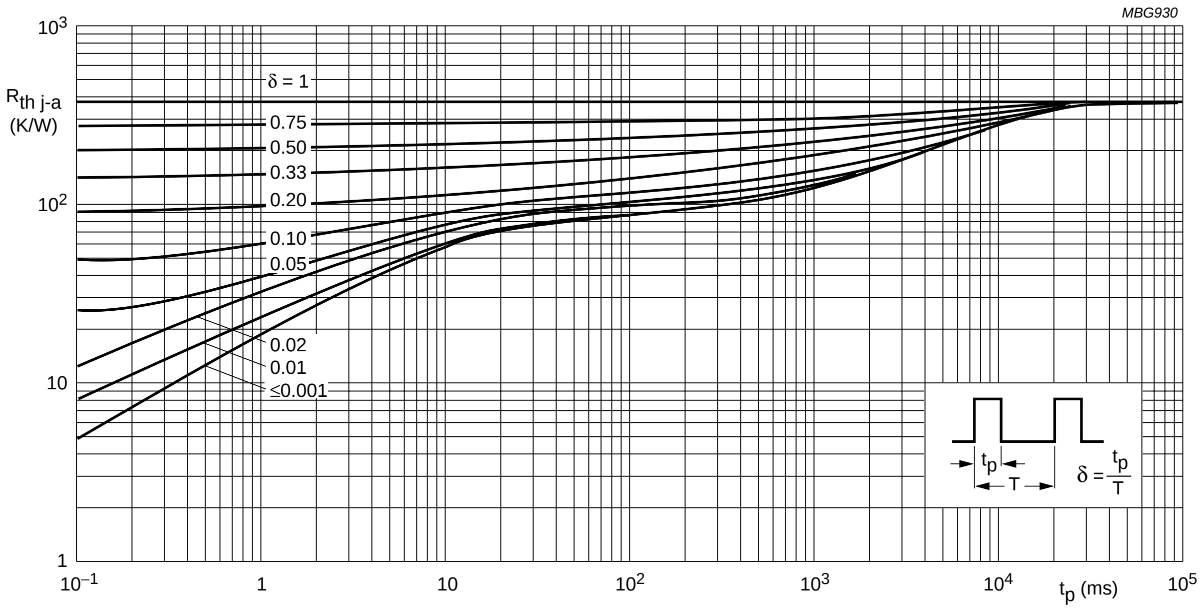
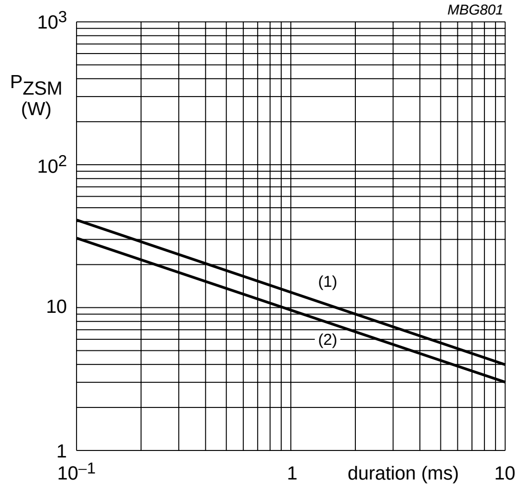
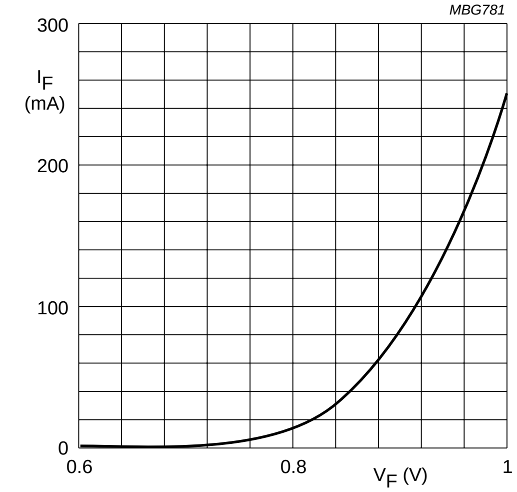


Fig.2 Thermal resistance from junction to ambient as a function of pulse duration.



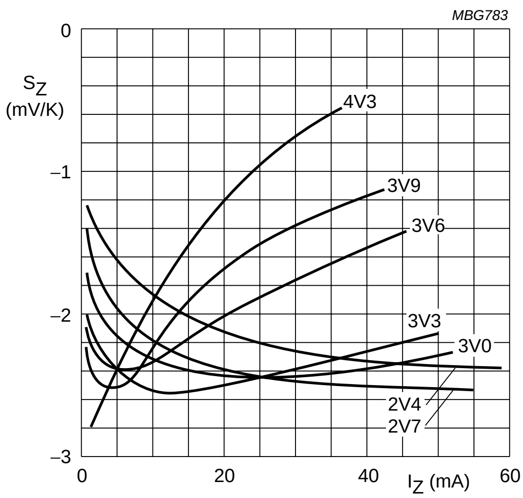
(1) T_j = 25 °C (prior to surge).
(2) T_j = 150 °C (prior to surge).

Fig.3 Maximum permissible non-repetitive peak reverse power dissipation versus duration.



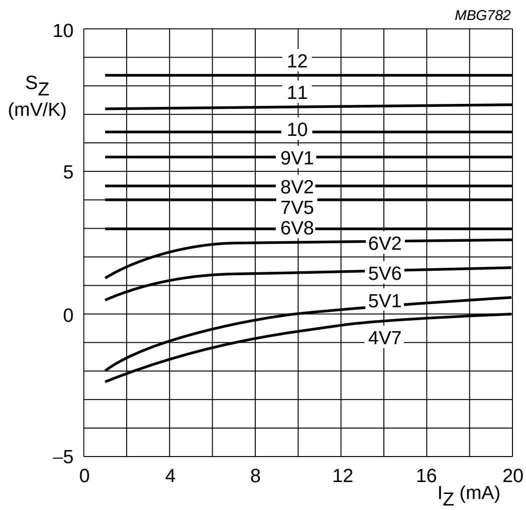
T_j = 25 °C.

Fig.4 Typical forward current as a function of forward voltage.



BZX79-B/C2V4 to BZX79-B/C4V3.
T_j = 25 to 150 °C.

Fig.5 Temperature coefficient as a function of working current; typical values.

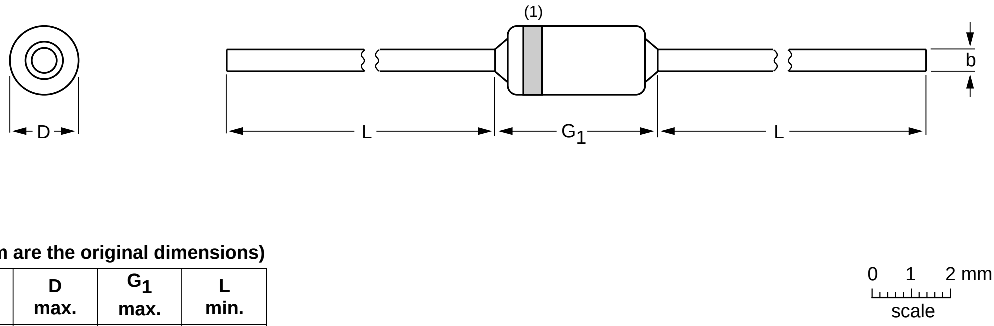


BZX79-B/C4V7 to BZX79-B/C12.
T_j = 25 to 150 °C.

Fig.6 Temperature coefficient as a function of working current; typical values.

PACKAGE OUTLINE

Hermetically sealed glass package; axial leaded; 2 leads **SOD27**



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G_1 max.	L min.
mm	0.56	1.85	4.25	25.4

Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD27	A24	DO-35	SC-40			97-06-09

DATA SHEET STATUS

DOCUMENT STATUS(1)	PRODUCT STATUS(2)	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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Printed in The Netherlands 613514/03/pp10 Date of release: 2002 Feb 27 Document order number: 9397 750 09387

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